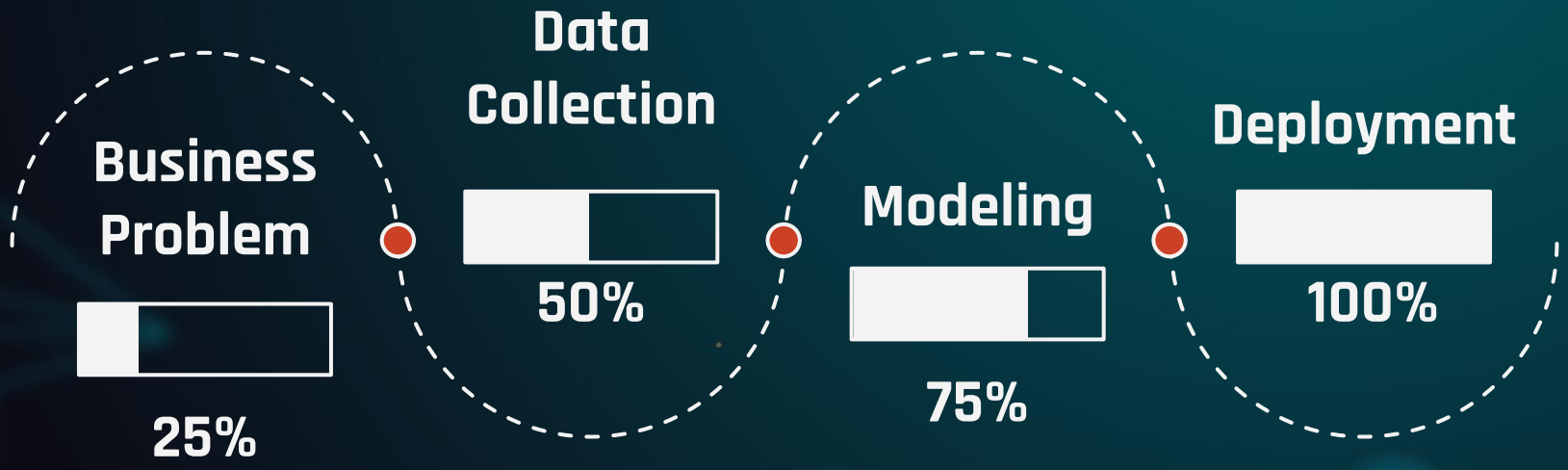
# Facial Recognition

By Nechama Borisute

# Project Overview

## STAGES



# Business Problem

This project addresses the escalating demand for sophisticated and precise facial recognition systems across diverse domains.

- **Security**
- **Attendance Management**
- **User authentication**

Leveraging advancements in deep learning techniques, the focus is on elevating the performance of these systems through the implementation of a **custom Siamese neural network**—a potent architecture renowned for its efficacy in face recognition tasks.

# Data Collection and Preprocessing

The **custom dataset** is comprised of images of my classmates, ensuring diversity in facial expressions, and angles.

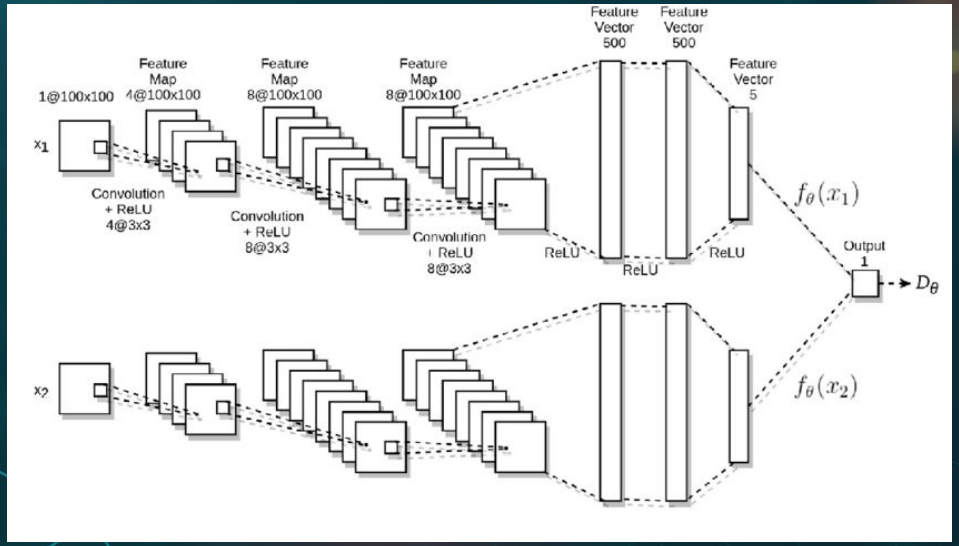
To prepare the dataset for training, a comprehensive data preprocessing pipeline was employed.

- **Resizing**
- **Cropping**
- **Normalization**
- **Face Detection**

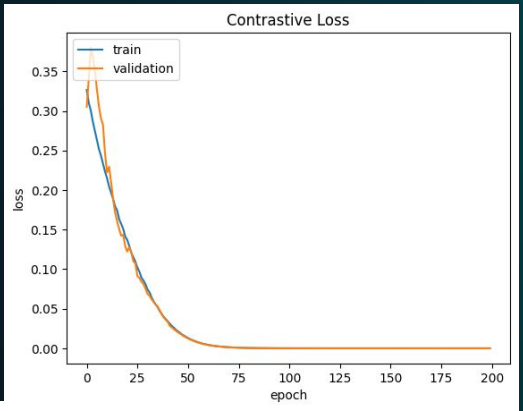
Including other essential transformations performed through a dedicated function to enhance the quality and suitability of the input images.

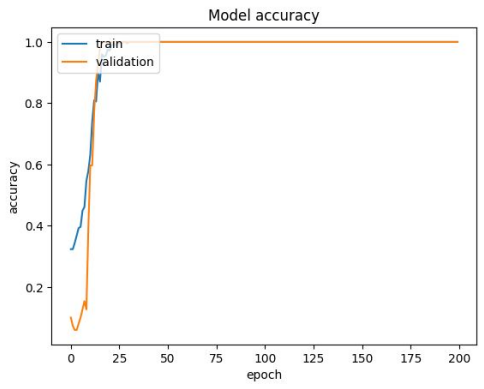
# Modeling: Siamese Network

- Finds similarities between images to recognize faces.



# Siamese Network: Evaluation




## Contrastive Loss Function

- Loss approaching 0

## Metrics

| | |
|---|---|
| Precision | 100% |
| Recall | 100% |
| F1 Score | 100% |
| Accuracy | 100% |

# Live Demo

# Next Steps

## Finalize Documentation

## Implement Procedure for Unknown Users

## Attendance System

Implement model into attendance system and for user authentication

# Thank You

Any Questions?